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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/747,943 | 12/31/2003 | Hye-Young Kim | 3430-0196P | 6952 |

2292 7590 09/09/2005

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EXAMINER

QI, ZHI QIANG

ART UNIT PAPER NUMBER

2871

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/747,943

Applicant(s)

KIM, HYE-YOUNG

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 and 26-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 19, 20 and 25 is/are rejected.
- 7) ☒ Claim(s) 5-12 and 21-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Korea on Dec.31, 2002. It is noted, however, that applicant has not filed a certified copy of the Foreign application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 21 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 21 and 25, recitation "...at least one groove through the gate insulating layer, the passivation layer and the inorganic layer" (claim 21), and "... at least one groove through the gate insulating layer and the passivation layer" (claim 25), that are not definite according to the drawings. The drawings, such as Fig.9E, one groove is not going through the gate insulating layer (110), but the groove contacts the gate insulating layer (110). For examination purpose, it is interpreted as one groove contacts the gate insulating layer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US 6,011,608 (Tanaka).

Regarding claim 1, Tanaka discloses (col.6, lines 44-64; Fig.7) that a liquid crystal display device comprising;

- first and second (lower and counter) substrates facing and spaced from each other;
- inorganic insulating layer (20) over an inner surface of the lower substrate (11) (first substrate);
- seal pattern (45) between the inorganic insulating layer (20) and an inner surface of the second substrates (counter substrate), and the seal pattern (45) contacting the inorganic insulating layer (20) (see Fig.7).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-4, 19-20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as applied to claim 1 above, and further in view of US 6,683,668 B2 (Moon et al).

Regarding claims 2-4, Tanaka teaches the invention set forth above. Tanaka lacks that a second inorganic insulating layer of silicon nitride (SiN_x) or silicon oxide (SiO_2) or silicon oxynitride (SiO_xNy) on the inner surface of the first substrate and an organic insulating layer of benzocyclobutene (BCB) or acrylic resin or methacrylic resin between the first and second inorganic insulating layers.

Moon discloses (col.4, line 18 – col.5, line 37; Fig.6) that a second inorganic insulating layer (84) of silicon nitride (SiN_x) on the inner surface of the first substrate (51) (lower substrate) and an organic insulating layer (68) of benzocyclobutene (BCB) between the inorganic insulating layer (62) (gate insulating layer) and the second insulating layer (84) in order to increase the adhesive strength.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display device of Tanaka with the teachings of using second inorganic insulating film as taught by Moon for increasing the adhesive strength, since using such inorganic insulating material on such organic insulating material increasing the adhesive strength (see col.4, lines 19-38).

Regarding claims 19-20, Tanaka teaches the invention set forth above. Tanaka further discloses (col.4, lines 7 – 42; Fig.2) that fabricating a liquid crystal display device comprises forming a thin film transistor (TFT) on a first substrate (lower substrate 11), forming passivation layer (organic insulating film 21 functions as passivation layer)

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covering the thin film transistor (TFT), forming a seal pattern (45) surrounding the thin film transistor (surrounds the display area) and bounding the two substrates so that the seal pattern (45) contacts the inorganic insulating layer (20) and the second (counter) substrate.

Tanaka lacks that an inorganic insulating layer on the passivation layer (organic insulating layer).

Moon discloses (col.4, line 18 – col.5, line 37;Fig.6) that an inorganic insulating layer (84) on the passivation layer (68) (organic insulating layer functions as passivation layer) in order to increase the adhesive strength.

Moon also discloses (Fig.6) that a gate electrode (56) formed on the first substrate (51), a gate insulating layer (62) (inorganic material) formed on the gate electrode (56), an active layer (64) formed on the gate insulating layer (62), and source (54) and drain (60) electrode formed on the active layer (64), and that is a conventional.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display device of Tanaka with the teachings of using an inorganic insulating film as taught by Moon for increasing the adhesive strength, since using such inorganic insulating material on such organic insulating material increasing the adhesive strength (see col.4, lines 19-38).

Regarding claim 25, Tanaka discloses (Fig.7) that one groove (in the seal area 42) contacts the gate insulating layer (the inorganic insulating layer 20 functions as gate insulating layer) and through the passivation layer (the organic layer 21 functions as passivation layer).

Allowable Subject Matter

7. Claims 5-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claim 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims, so that the claims 22-24 would be allowable as the claims 22-24 are dependent on the claim 21.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches that a liquid crystal display device and the fabricating method comprising various elements and steps as claimed, more specifically, as the following:

the second inorganic insulating layer has at least one groove through the first inorganic insulating layer and the organic layer, and forming at least one groove through the gate insulating layer, the passivation layer and the inorganic insulating layer [claims 5, 11 and 21, as shown in Fig.9E].

The closest reference Tanaka teaches that using organic insulating layer on an inorganic insulating layer, and the seal pattern contacting the inorganic insulating layer. The reference Moon teaches using second inorganic insulating layer on an organic insulating layer, but it does not teach the second inorganic insulating layer having groove through the first inorganic insulating layer (gate insulating layer), organic

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insulating layer (passivation layer) and the second inorganic insulating layer as claimed and as shown in Fig.9E.

Election/Restrictions

1. Applicant's election with traverse of July 28, 2005 is acknowledged. The traversal is on the ground(s) that Applicant request withdrawal of the Restriction Requirement. This is not found persuasive because the claims contain different species that corresponding to different embodiment the Fig.8, Fig.9E; Fig.10F, Fig.11D; Fig.12E, Fig.13C, Fig.14C and Fig.15, and that would need further different searches.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 13-18 and 26-29 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 28, 2005.

Further, the claims 5, 11, and 21 are objected, and the claims 6-10 are dependent on claims 5, the claim 12 is dependent on claim 11, the claim 22-24 are dependent on claim 21, so that the claims 5-12 and 21-24 are objected.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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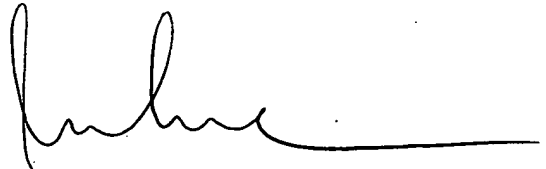
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi
August 31, 2005



DUNG T. NGUYEN
PRIMARY EXAMINER